US Army Corps
of Engineers

Engineer Research and
Development Center

Fact Sheet

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Vector Product Format (VPF) Exploitation Software (VPFES)

Description and Background: The U.S. Army Topographic Engineering Center has developed a suite of reusable software tools aimed at helping the Army community exploit vector-based Digital Topographic Data (DTD). The software, collectively called Vector Product Format Exploitation Software (VPFES), is designed for data sets that are based on the Department of Defense's Vector Product Format (VPF). (For information on VPF, see the VPF fact sheet.) VPF was developed by the National Imagery and Mapping Agency (NIMA) as the standard data format for its vector-based products. NIMA products using or planning to use VPF include: VPF Interim Terrain Data (VITD), Digital Nautical Chart (DNC), all Vector Map products (VMap Levels 0, 1, 2, and Urban VMap), Foundation Feature Data (FFD) and Digital Topographic Data (DTOP), the terrain analysis component of Tactical Terrain Data (TTD). Army exploitation of these products is critical to successful operations in mission-specific applications that include: Modeling and Simulation; Command and Control; and Mission Planning and Rehearsal.

Key Capabilities: VPFES is organized into a library of well documented, platform-independent, modular software utilities that are accessible through a Windows or Unix/X-Windows-based Graphical User Interface (GUI). All utilities in the library will be compliant with MIL-STD-2407 (Interface Standard for VPF, dated June 28, 1996). Initial utilities populating the library will provide the following capabilities:

- VPF Launcher - application launcher for all VPFES utilities.
- VPF Data base Search - to search specified storage devices for the presence of VPF bases.
- VPF Select - uses windows-style directory tree to allow the selection of files in the VPF hierarchy.
- VPF Read - to access, parse and read the VPF data set into memory.
- VPF Objects - to group parsed data into logical VPF objects (i.e., coverages and feature classes).
- VPF Browse - to textually display and navigate the VPF data set as grouped by VPF Objects.
- VPF Extract - to define an extraction region and extract subsets or supersets of VPF data.
- VPF Topology Engine - to rebuild the topology of the extracted data set.

- VPF Write - to write a VPF-compliant data set to a disk file.
- VPF Draw - to view VPF data sets with simple color line and polygon fill graphics (not symbolized).
- VPF Statistics - to generate feature and attribute content statistics on a VPF data set.
- VPF Verifier - to identify specification violations in a VPF data set.

The VPFES GUI provides the common gateway and operational interface to all utilities in the library.

Utilities are designed for reuse and, as such, are able to run independently or be easily extracted and incorporated into other applications and GUI's with minimal effort.

Current Status: VPFES was completed in September 1998.

Future Enhancements: VPFES is designed to allow for new software components, providing additional capabilities, to be easily integrated into the existing mix of exploitation tools. TEC will explore adding new components after the initial software is established. One of the first enhancements to be considered are components that will allow VPF data sets to be edited and enhanced (value added) using imagery and ground-truth data.

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